REMARKS

Preliminary Matters

Claims 1-7 are pending in the application. By this amendment Applicants are amending claims 1-3, and 5-7, and canceling claim 4.

Applicants thank the Examiner for acknowledging receipt of all priority documents submitted under 35 U.S.C. § 119(a)-(d) and for considering all of the references cited in the Information Disclosure Statement that was filed on May 27, 2005.

Election/Restriction

Applicants affirm the election made on August 11, 2008 of group 1, claims 1 and 2, directed toward a method.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejected claim 1 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Rius (US 6,328,805) in view of Asmussen (US 5,311,103).

In rejecting claim 1, the grounds of rejection state:

> Rius teaches a method of depositing an internal coating (col 6, lines 29-31) on thermoplastic bottle (col 3, lines 64-66) using a plasma (abstract) with use of electromagnetic wave in the UHF range (col 2, lines 43-45) in a circular chamber (Figure 3).
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> Rius does not teach coating multiple subtrates at one time or the use of a coupling mode to generate several electromagnetic waves within the chamber.
>
> Asmussen teaches a method of generating a plasma for coating a number of substrates with a UHF plasma (abstract) and a TM mode of resonance (col 6, lines 54-67) with (plural) microwaves in the chamber (col 10, lines 5-8).
>
> It would have been obvious to one of ordinary skilli n the art a the time of the invention to apply the method of coating

> multiple substrates in one chamber taught by Asmussen to the plasma deposition method of Rius because it would increase the throughput, which is a known goal in the deposition art.
>
> Regarding the use of a chamber sized in relation to the UHF waves, Asmussen teaches modifying the TM mode and speaks of a wave coupler means - it would have been obvious to someone of ordinary skill in the plasma art to optimize the plasmas to the dimensions of the chamber.

(Office Action at page 5.)

Regarding claim 1, Applicants respectfully submit that neither Asmussen nor Rius disclose "wherein a frequency of the UHF electromagnetic waves is selected and said chamber is sized such that a coupling mode is generated which generates several electromagnetic fields inside the chamber." The Examiner relies on Rius as disclosing a device for depositing an internal coating on a thermoplastic bottle using plasma excited by an electromagnetic wave. (*See* Office Action, p. 5). The Examiner concedes, however, that Rius does not disclose "coating multiple substrates at one time or the use of a coupling mode to generate several electromagnetic *waves* within the chamber." (Office Action, page 5; emphasis added.) Applicants note here that claim 1 recites several electromagnetic *fields*, and not electromagnetic *waves* as indicated by the Examiner.

The Examiner relies on Asmussen as disclosing several electromagnetic *waves*. The Examiner cites Asmussen for "a method of generating a plasma for coating a number of substrates with a UHF plasma . . . and a TM mode of resonance . . . with (plural) microwaves in the chamber." (Office Action, page 5 (citing Asmussen, col. 10, lines 5-8).) It appears that the Examiner is citing the "plural microwaves" in Asmussen as disclosing the "several electromagnetic fields" recited in claim 1. Plural microwaves, however, are not the same as several electromagnetic fields. Electromagnetic waves can create an electromagnetic field but do

not necessarily create several electromagnetic fields. As such, Asmussen does not disclose producing several electromagnetic fields. To the contrary, the document discloses treatment of multiple substrates in a single and sole electromagnetic field. Thus, even if one skilled in the art were to combine or modify the microwave plasma deposition device of Rius with the microwave coating apparatus of Asmussen, the result would not produce all of the recited features of claim 1.

Also, it would not have been obvious to combine Asmussen with Rius to produce multiple electromagnetic fields. Asmussen discloses a device for "depositing diamond films on a number of substrates (Si, Si_3N_4 and the like)." (Asmussen, abstract.) The deposition of diamond materials on substrates, such as silicon wafers, is unrelated to depositing a barrier material on the walls of a thermoplastic bottle. Therefore, one having ordinary skill in the art would not have combined Asmussen with Rius.

The Examiner also rejected claim 1 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Collins (US 5,707,486) in view of Asmussen and Rius. In rejecting claim 1, the grounds of rejection state:

> Collins teaches a (vacuum) plasma reactor and method of deposition involving use of a UHF plasma (abstract). Collins teaches a circular vacuum chamber (Fig 2) wherein the "system construction permits scaling of its size by selecting the frequency of operation" (col 4, lines 63-64.) Collins discusses the size in relation to plasma and the mode (col 3, lines 5-19) but does not teach coating of thermoplastics or multiple substrates.
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> * * *
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> It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the method of coating multiple substrates in one chamber taught by Asmussen to the plasma deposition method of Collins because it would increase the throughput, which is a known goal in the art.

* * *

> It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the method of Rius of processing thermoplastic bottles to the method of Collins because modifying methods to apply coatings to various (types of) substrates is well known in the art.

(Office Action at page 6.)

As discussed above, however, neither Asmussen nor Rius disclose or render obvious producing several electromagnetic fields inside of the chamber. Similarly, Collins does not disclose producing several electromagnetic fields inside of the chamber. The Examiner only refers to Collins as discussing "the size in relation to plasma and the mode." (Office Action, p. 6.) Collins's discussion of size in relation to plasma and mode, however, does not disclose several electromagnetic fields inside of a chamber. Collins only mentions that "to scale a 5-6 in. microwave system upward to accommodate larger semiconductor wafers requires the use of higher modes of operation. This scaling at a fixed frequency by operating at higher modes requires very stringent process controls to avoid so-called mode flipping to higher or lower order moads [sic] and resulting process changes." (Collins, col. 3, ll. 10-15.) Collins mentions nothing about several electromagnetic fields inside of the chamber. Thus, Collins does not disclose sizing the chamber to generate several electromagnetic fields. Therefore, even if one were to rely on Collins, no combination or modification would result in the claimed subject matter.

Nor would it have been obvious to combine Rius with Collins. Collins discloses a device that is used for "etching metals, dielectrics and semiconductor materials." (Collins, Abstract.) In contrast, Rius discloses a device for "processing a container (30) using a low pressure plasma." (Rius, abstract.) Metals, dielectrics, semiconductors and substrates are entirely unrelated to containers such as thermoplastic bottles. Thus, one having ordinary skill in the art the current

invention would not have looked to Collins or Asmussen when developing a method for processing thermoplastic bottles.

The Examiner also rejected claim 1 under 35 U.S.C. 103(a) as allegedly being unpatentable over Fairbairn (US 6,152,070) in view of Asmussen and Rius. In rejecting claim 1, the grounds of rejection state:

> Fairbairn teaches a method of deposition (col 17, lines 42-45) processing multiple wafers in a chamber that contains two circular processing regions (col 12, lines 29-31). The regions may include a common RF power source to provide plasma power for deposition (col 4, lines 27-31). Fairbairn does not describe use of one shared power sources as the preferred method for generating plasma.
>
> Fairbairn teaches microwaves guided into the chamber by a wave guide (col 18, lines 40-51) but does not specifically teach matching the size of the chamber with the frequency or the use of thermoplastic containers as substrates. (Fairbarin teaches microwaves specifically in light of a cleaning operation, however, it would have been obvious to one of ordinary skill in the art to apply these to the deposition process as well as it is related to reacting the gases, which is also taught by Fairbairn in regards to deposition). (Note: microwaves are not exclusive of UHF waves).
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> * * *
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> It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the TM mode of resonance taught by Asmussen to the dual circular chambers taught by Fairbairn because perfecting of the plasma apparatus is well known in the deposition art for optimizing a process. Optimizing chamber size and shape (alluded to by Asmussen, col 6, lines 54-60) is a standard step in plasma optimization.
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> * * *
>
> It would have been obvious to one of ordinary skilli nthe art at the time of the invention to apply the method of Rius of processing thermoplastic bottles to the method of Fairbairn in view of Asmussen because modifying methods to apply coating to various (types of) substrates is well known in the deposition art.

(Office Action at pages 7-8.)

Once again, regarding claim 1, neither Asmussen nor Rius disclose or render obvious sizing the chamber in relation to the frequency of the electromagnetic waves to produce several electromagnetic fields. Nor does Fairbairn disclose that "a frequency of the UHF electromagnetic waves is selected and said chamber is sized such that a coupling mode is generated which generates several electromagnetic fields inside the chamber." While Fairbairn discloses the use of several fields to treat individually several respective objects, it does not provide only one chamber inside of which several fields are generated so as to treat the several respective objects. Rather, Fairbairn discloses a "plurality of isolated chambers formed therein." (Fairbairn, col. 2, lines 36-37.) In fact, the Examiner even concedes that Fairbairn "does not specifically teach matching the size of the chamber with the frequency." (Office Action at page 7.) Thus, combining Fairbairn with Asmussen and Rius would not produce all of the recited features of claim 1.

It also would not have been obvious to combine Rius with Fairbairn. Like Asmussen and Collins, Fairbairn discloses a "method and apparatus . . . for concurrent processing of multiple wafers in the fabrication of integrated circuits." (Fairbairn, col. 1, lines 5-7.) Again, one having ordinary skill in the art of the current invention would not look to a device in the fabrication of integrated circuits.

Lastly, the Examiner rejected claim 2 under 35 U.S.C. 103(a) as being unpatentable over Fairbairn in view of Asmussen, and Rius as applied to claim 1 above and in further view of Risman (US 5,834,744).

As previously discussed, Fairbairn, Asmussen and Rius do not render the features of claim 1 obvious. Since claim 2 depends from claim 1, claim 2 would be allowable at least by virtue of its dependency on claim 1.

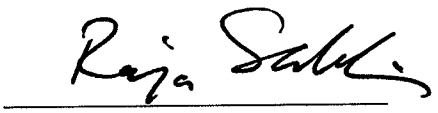
Furthermore, Risman does not render the features of claim 2 obvious. Claim 2 recites: "a TM 120 coupling mode . . . which generates two central fields inside the chamber, whereby two containers can be simultaneously treated in said chamber." The Examiner concedes that Fairbairn, Asmussen, and Rius do not disclose the use of a TM_{120} coupling mode. The Examiner relies on Risman as disclosing a TM_{120} mode. Risman discloses that "each applicator is sized to support only one dominant mode, preferably a TM_{120} type . . . ." (Risman, col. 2, ll. 29-34.) Risman, however, does not teach the use of a TM_{120} mode to uniformly apply a barrier layer on a surface of a thermoplastic container. Rather, Risman discloses a device for heating objects in a heating chamber. (Risman, col. 1, ll. 4-7.) Thus, Risman does not suggest or indicate that a TM_{120} mode is suitable for plasma deposition on two thermoplastic containers, as claimed by claim 2. As such, claim 2 is not obvious in view of the prior art.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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